

AMENDMENTS TO THE CLAIMS

The following is a complete, marked up listing of revised claims with a status identifier in parentheses, underlined text indicating insertions, and strikethrough and/or double-bracketed text indicating deletions.

LISTING OF THE CLAIMS

1. (Currently Amended) A transponder reader ~~arranged to~~ for reading data from a plurality of transponders, ~~wherein each of said~~ the transponders sending data according to ~~one~~ a plurality of transponder ~~signalling~~ signaling protocols, the transponder reader comprising:

~~—said transponder signalling protocol is selected from a number of different transponder signalling protocols, and~~

~~—a first and a second transponder signals according to the same or different protocols,~~

~~—said transponder reader comprises an antenna means for~~ configured to sending a first analogue signal to one of ~~said~~ the transponders and to receive ~~receiving~~ a second analogue signal from ~~said the one~~ transponders, and;

~~—said transponder reader further comprises means for analysing said a signal processor configured to analyze the second analog signal received by said the antenna means wherein;~~

~~—said transponder reader comprises a digital~~ processor processing means,

~~—said transponder reader comprises an analogue to digital converter arranged configured to,~~

~~receive said the second analogue signal from said the second analogue signal antenna to supply said first digital processing means,~~

~~convert the second analog signal to a first digital signal, and~~

~~transmit the first digital signal to the digital processor, —said digital processing means comprises analysing means arranged to analyse said received digital signals according to at least two different transponder signalling protocols the digital processor configured to identify, from the first digital signal, which transponder signaling protocol of the plurality of transponder signaling protocols was used to send the second analog signal.~~

2. (Currently Amended) The transponder reader according to claim 1, wherein ~~said analysing means comprises first demodulating, detecting and decoding means for demodulating, detecting and decoding~~ the signal processor is configured to demodulate, detect, and decode digital signals according to at least two different first transponder signalling signaling protocols ~~and second demodulating, detecting and decoding means for demodulating, detecting and decoding digital signals according to a second transponder signalling protocol.~~

3. (Currently Amended) The transponder reader according to claim 1, wherein ~~said transponder reader further comprises~~ comprising:

~~a transmitter configured to send the analyzed transmitting means for sending said analysed first digital signal to a post-processor processing means.~~

4. (Currently Amended) The transponder reader according to claim 1, wherein,

~~—said the antenna means comprises means for controlling includes a digital interface the antenna characteristics, — said antenna means comprises a digital interface for receiving configured to receive digital messages from said digital processing means the digital processor and transmitting digital messages to said digital processing means the digital processor, —said antenna means the digital interface configured to controls said characteristics of the antenna characteristics in dependence of said based on the received digital messages, and~~

~~—said the antenna means is configured to transmit digital messages relating to the antenna characteristics to the digital processor said digital processing means.~~

5. (Currently Amended) The transponder reader according to claim 4, wherein ~~said the digital messages comprises information selected from the group of information comprising:~~ sent to the digital interface include at least one of antenna ready to send information, antenna on line information, output amplification information, and frequency tuning coefficients.

6. (Currently Amended) The transponder reader according to claim 1, wherein ~~each of said at least two protocols are selected from the group of protocols including:~~ the plurality of transponder signaling protocols include at least two of half-duplex protocols, full-duplex protocols, proprietor protocols (B-protocol) and read/write protocols.

7. (Currently Amended) The transponder reader according to claim 1, further comprising:

a digital to analog converter, wherein ~~said~~ the digital processing means processor configured to supply a second digital signal[[s]] to [[a]] the digital to analogue converter, the digital to analog converter configured to for converting ~~said~~ the second digital signal to ~~said~~ the first analogue signal, ~~said digital to analogue converter supplies said~~ and transmit the first analogue signal to ~~said~~ the antenna ~~means for transmission.~~

8. (Currently Amended) The transponder reader according to claim 1, wherein ~~said~~ the digital processor is configured to demodulate the ~~processing means comprises means for demodulating said~~ first digital signal according to a ~~first and~~ at least a ~~second~~ two different demodulation schemes.

9. (Currently Amended) The transponder reader according to claim 8, wherein ~~said~~ the digital processor is configured to detect ~~processing means~~

~~comprises means for detection of~~ symbols from said the demodulated digital signal according to a first and at least a second two different symbol detection schemes.

10. (Currently Amended) The transponder reader according to claim 9, wherein said the digital processor is configured to decode ~~processing means comprises means for decoding the detected~~ symbols from said ~~detected symbols~~ according to ~~a first and at least a second~~ two different symbol decoding schemes.

11. (Currently Amended) The transponder reader according to claim 10, wherein ~~said decoding comprises or consists of~~ the digital processor is configured to decode the detected symbols by performing an error detection check e.g. a cyclic redundancy check.

12. (Currently Amended) The transponder reader according to claim 10, wherein ~~said transponder reader comprises means for detecting the digital processor is configured to detect~~ which of said ~~first and at least second means for the two different~~ demodulating, detection, and decoding schemes that produce[[s]] the best a highest signal detection quality, the digital processor configured to demodulate, detect, and decode according to the determined schemes and using said means.

13. (Currently Amended) The transponder reader according to claim 10, wherein the digital processor is configured to receive an operator selection among the two different demodulating, detection, and decoding schemes, the digital processor configured to demodulate, detect, and decode according to the selection ~~selects which demodulator, detector and decoder to be used by said digital processing means.~~

14. (Currently Amended) The transponder reader according to claim 1, wherein ~~said one of at least two different~~ the transponder ~~signalling~~ signaling protocol[[s]] used to send the second analog signal is a full duplex protocol, ~~and~~ the transponder reader further comprising:

~~—said~~ a subtractor configured to subtract the first analogue signal is ~~subtracted~~ from ~~said~~ the second analogue signal so as to remove ~~the~~ a contribution from the first analogue signal from ~~the~~ reception of ~~said~~ the second analogue signal.

15. (Currently Amended) The transponder reader according to claim 14, wherein ~~—said~~ the subtractor is configured to boost the first analogue signal ~~is boosted before being subtracted~~ subtracting the first analog signal from ~~said~~ the second analogue signal.

16. (Currently Amended) The transponder reader according to claim 1, wherein ~~—said transponder reader comprises means for deciding which of at~~

~~least said two different~~ the antenna is configured to send further analog signals using the transponder signalling signaling protocol[[s]] used to send the second analog signal ~~that said transponder is using in responding to said first analogue signal, and using said protocol.~~

17. (Currently Amended) The transponder reader according to claim 16, wherein ~~said decision is performed~~ the digital processor is configured to identify the transponder signaling protocol used to send the second analog signal in a start up sequence and ~~that said transponder reader assume~~[[s]] that all transponders are working according to ~~said detected~~ the transponder signaling protocol used to send the second analog signal.

18. (Currently Amended) The transponder reader according to claim 1, wherein the digital processor is configured to identify the transponder signaling protocol used to send the second analog signal based further on [[-]] an operator ~~selects~~ selection of an ~~the~~ appropriate transponder ~~signalling~~ signaling protocol.

19. (Currently Amended) The transponder reader according to claim 4, wherein ~~said transponder reader comprises means for setting~~ the digital interface is configured to set the antenna characteristics ~~in dependence of~~ based on detected environmental characteristics so as to achieve optimal

~~signalling~~ signaling detection quality in relation to the electromagnetic environment.

20. (Currently Amended) The transponder reader according to claim 9, wherein ~~the~~ a phase of ~~said~~ the first analogue signal is controlled.

21. (Currently Amended) A method for reading data from transponders, wherein ~~each of said~~ the transponders sending data according to ~~one~~ a plurality of transponder ~~signalling~~ signaling protocols, ~~—said transponder signalling protocol is selected from a number of different transponder signalling protocols, and —a first and a second transponder signals according to the same or different protocols,~~ the method comprising:

[[—]] sending, with an antenna, a first analogue signal to one of ~~said~~ the transponders; ~~and~~

receiving, with the antenna, a second analogue signal from ~~said~~ the one transponder[[s]] ~~using an antenna means, and;~~

~~—analysing said second analogue signal received by said antenna means, wherein~~

[[—]] converting said the second analogue signal from ~~the~~ an analogue domain to a first digital signal in ~~the~~ a digital domain[[.]]; ~~—supplying said first digital signal to digital processing means,~~

~~—analysing said received~~ identifying, with a digital processor, which transponder signaling protocol of the plurality of transponder signaling

protocols was used to send the second analog signal, the identifying being based on the first digital signal using said digital processing means for establishing which of at least two different transponder signalling protocols said transponder uses; and

~~—selecting said established one of said at least two different transponder signalling signaling protocols, and~~

~~—analysing said analyzing the first digital signal according to said selected the transponder signalling signaling protocol used to send the second analog signal.~~

22. (Currently Amended) The method according to claim 21, wherein ~~said analysing comprises the analyzing includes demodulating, detecting, and decoding the first digital signal[[s]] according to a ~~first and~~ at least a ~~second two different~~ transponder signalling signaling protocols.~~

23. (Currently Amended) The method according to claim 21, further comprising:

~~the step of sending said analysed the analyzed first digital signal to a post-processor processing means.~~

24. (Currently Amended) The method according to claim 21, wherein - ~~said the antenna ~~means comprises means for controlling~~ includes a digital interface ~~the antenna characteristics, —said antenna means comprises a~~~~

~~digital interface for receiving~~ configured to receive digital messages from said ~~digital processing means~~ the digital processor and transmitting digital messages to said ~~digital processing means~~ the digital processor, and characterised by the further steps of the method further comprising:

[[-]] controlling said characteristics of the antenna ~~characteristics in dependence of said~~ based on the received digital messages[[,]]; and

[[-]] transmitting digital messages ~~from said antenna means~~ relating to the antenna characteristics to said the digital processor ~~processing means~~.

25. (Currently Amended) The method according to claim 24, wherein said the digital messages ~~comprises information selected from the group of information comprising~~ sent to the digital interface include at least one of antenna ready to send information, antenna on line information, output amplification information, and frequency tuning coefficients.

26. (Currently Amended) The method according to claim 21, wherein - ~~each of said at least two protocols are selected from the group of protocols including~~ the plurality of transponder signaling protocols include at least two of half-duplex protocols, full-duplex protocols, propriotor protocols (B-protocol) and read/write protocols.

27. (Previously Presented) The method according to claim 21, ~~wherein~~ further comprising:

~~—supplying~~ transmitting a second digital signal[[s]], from ~~said the~~ digital ~~processing means~~ processor to a digital to analogue converter ~~for~~ configured to ~~converting~~ said the second digital signal to ~~said the~~ first analogue signal,

~~—supplying~~ said transmitting the first analogue signal, from ~~said the~~ digital to analogue converter to ~~said the~~ antenna ~~means~~ for transmission.

28. (Currently Amended) The method according to claim 21, further comprising:

~~wherein — said~~ demodulating, with the digital processor, the ~~processing means comprises means for demodulating~~ said first digital signal according to ~~a first and at least a second~~ two different demodulation schemes.

29. (Currently Amended) The method according to claim 28, further comprising:

~~wherein said~~ detecting, with the digital processor, processing means ~~comprises means for detection of~~ symbols from ~~said the~~ demodulated digital signal according to a first and at least a second two different symbol detection schemes.

30. (Currently Amended) The method according to claim 29, further comprising:

~~wherein said decoding, with the digital processor, processing means~~
~~comprises means for decoding the detected symbols from said detected~~
~~symbols according to a first and at least a second two different symbol~~
~~decoding schemes.~~

31. (Currently Amended) The method according to claim 30, wherein -
~~said decoding comprises or consists of the decoding includes~~ performing an
error detection check e.g. ~~a cyclic redundancy check.~~

32. (Currently Amended) The method according to claim 30, further
comprising ~~the steps of:~~

[[-]] detecting which of ~~said first and at least second means for the two~~
~~different~~ demodulating, detection, and decoding schemes ~~that~~ produce[[s]]
~~the best a highest signal detection quality, the digital processor configured~~
~~to demodulate, detect, and decode according to the detected schemes and~~
~~using said means.~~

33. (Currently Amended) The method according to claim 30, further
comprising:

~~wherein receiving, from an operator, a selection among the two~~
~~different demodulating, detection, and decoding schemes, the demodulating,~~
~~detecting, and decoding being executed according to the selection selects~~

~~which demodulator, detector and decoder to be used by said digital processing means.~~

34. (Currently Amended) The method according to claim 21, wherein ~~said one of at least two different~~ the plurality of transponder signalling protocols ~~is~~ includes a full duplex protocol, ~~and wherein the method further comprising~~ includes the steps of:

[[-]] subtracting said the first analogue signal from ~~said the~~ second analogue signal so as to remove ~~the~~ a contribution from the first analogue signal from the reception of ~~said the~~ second analogue signal.

35. (Currently Amended) The method according to claim 34, further comprising ~~the step of:~~

[[-]] boosting ~~said the~~ first analogue signal before the subtracting ~~said first analogue signal from said second analogue signal.~~

36. (Currently Amended) The method according to claim 21, further comprising ~~the step of:~~

[[-]] ~~deciding which of at least said two different~~ sending further analog signals using the transponder signalling signaling protocol[[s]] used to send the second analog signal ~~that said transponder is using in responding to said first analogue signal, and using said protocol.~~

37. (Currently Amended) The method according to claim 36, ~~comprising the step of: performing said~~ wherein,

the identifying the transponder signaling protocol used to send the second analog signal is executed in a start up sequence,

and ~~that said transponder reader~~ further signal processing assume[[s]] that all transponders are working according to ~~said detected~~ the transponder signaling protocol used to send the second analog signal.

38. (Currently Amended) The method according to claim 21, ~~wherein~~ further comprising:

receiving an operator ~~selects~~ selection of an ~~the~~ appropriate transponder ~~signalling~~ signaling protocol.

39. (Currently Amended) The method according to claim 24, further comprising ~~the step of:~~

[[-]] setting the antenna characteristics ~~in dependence of~~ based on detected environmental characteristics so as to achieve optimal ~~signalling~~ signaling detection quality in relation to the electromagnetic environment.

40. (Currently Amended) The method according to claim 24, further comprising: ~~wherein—~~ controlling ~~the~~ a phase of ~~said~~ the first analogue signal.